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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,657	08/28/2001	Yuji Takahashi	R2184.0119/P119	4486

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DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP
2101 L Street, NW
Washington, DC 20037

EXAMINER	
THOMPSON, JAMES A	

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/939,657	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	James A. Thompson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2006 and 19 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 19 December 2005 has been entered.

Response to Arguments

2. Applicant's arguments filed 19 December 2005 have been fully considered but they are not persuasive. Applicant's arguments have been fully responded to in the Advisory Action mailed 04 January 2006. The presently entered amendments to the claims have been fully considered by Examiner. Corresponding prior art rejections are set forth below.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-2 and 4-6 are rejected under 35 U.S.C. 102(a) as being anticipated by Lee (US Patent 6,160,913).

Regarding claim 1: Lee discloses an image data correcting device (figure 1 and column 3, lines 65-67 of Lee) comprising detecting means for detecting an intensity difference between first image data corresponding to a part of a predetermined small area (figure 3a and column 5, lines 10-14 of Lee) and second image data corresponding to the remaining parts of the predetermined small area (column 5, lines 9-10, lines 14-19, and equations (1)-(3) of Lee). The calculation of a gradient in a window (column 5, lines 9-19 and equations (1)-(3) of Lee) is a determination of an intensity difference at the pixel of interest (i,j) of said pixel of interest and the immediately surrounding pixels of a window, said window being the small area.

Lee further discloses determining means for determining whether the first image data corresponds to a halftone image (column 5, line 65 to column 6, line 3 of Lee); and intensity changing means for changing an intensity of the first image data to a predetermined low intensity (BLACK) (column 6, lines 14-21 of Lee), when the intensity difference is equal to or smaller than a first predetermined value (GT) and the first image data does not correspond to the halftone image (figure 2A(208,211) and column 5, line 66 to column 6, line 4) and the intensity of the first image data is equal to or smaller than a second predetermined value (IT) (figure 2A(215,217) and column 6, lines 11-17 of Lee), wherein the determining means retains the first image data without change when the first image data corresponds to the halftone image (column 6, lines 1-9 of Lee). If the image data pixel is a grayscale image pixel, then edge-based

adaptive processing is not performed on the pixel (column 6, line 1-9 of Lee). Therefore, the first image data is retained without change when the first image data corresponds to the halftone image.

The method taught by Lee is embodied in an apparatus (column 3, lines 65-67 of Lee) and operates upon digital data (column 4, lines 4-9 of Lee). Therefore, either digital hardware or embodied software of said apparatus provides each of the means of the apparatus.

Regarding claim 2: Lee discloses that the second predetermined value is determined so that an intensity of at least a part of an image other than the halftone image (column 6, lines 5-12 of Lee) is equal to or greater than the second predetermined value (figure 2A(215,218,237) and column 6, lines 16-21 of Lee) and an intensity of the halftone image is smaller than the second predetermined value (column 6, lines 11-17 of Lee). The background pixels are a part of the image other than the halftone image. The background pixels have an intensity greater than or equal to the second predetermined value (column 6, lines 5-12 of Lee).

Regarding claim 4: Lee discloses that the predetermined small area is defined by a pixel matrix (figure 3A of Lee), and the first image data corresponds to one of pixels located in the center of the pixel matrix (column 5, lines 7-12 of Lee).

Regarding claim 5: Lee discloses that the pixel matrix is a 3x3 matrix (figure 3A and column 5, lines 11-15 of Lee).

Regarding claim 6: Lee discloses that the predetermined low intensity is equal to or smaller than an intensity of a background of an image from which the predetermined small area is extracted (column 6, lines 11-21 of Lee). The predetermined

low intensity (BLACK) is clearly smaller than an intensity of a background (WHITE) of an image from which the predetermined small area is extracted.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US Patent 6,160,913) in view of Stoffel (US Patent 4,194,221).

Regarding claim 3: Lee discloses that the first predetermined value is determined so that a first intensity difference of the first image data is equal to or greater than the first predetermined value when the first image data corresponds to the halftone image (column 6, lines 24-26 and lines 29-33 of Lee), wherein the first intensity difference is based on a Sobel gradient operator in the 3x3 window (column 5, lines 10-17 of Lee).

Lee does not disclose expressly that the first intensity difference is a difference between the intensity of the first image data and an average in intensities of the first image data and the second image data.

Stoffel discloses calculating a difference between the intensity of the first image data (center pixel) and an average

in intensities of the first image data and the second image data (neighboring pixels) (column 4, lines 50-56 and column 5, lines 9-12 of Stoffel).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee and Stoffel are combinable because they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to calculate the difference between the pixel being examined and the average of the pixels in the window, including said pixel being examined, as taught by Stoffel. In the apparatus of Lee, this would correspond to calculating the difference between the center pixel of the small area window and the average over all the pixels in said small area window. The suggestion for doing so would have been that the differencing and averaging operations taught by Stoffel can be used to discriminate between different types of image data (column 4, lines 50-53 of Stoffel), which is what the apparatus taught by Lee attempts to perform. Therefore, it would have been obvious to combine Stoffel with Lee to obtain the invention as specified in claim 3.

7. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US Patent 6,160,913) in view of Sakamoto (US Patent 5,235,436).

Regarding claim 7: Lee does not disclose expressly smoothing means for smoothing the first image data after the intensity of the first image data is changed.

Sakamoto discloses smoothing means (figure 13(32) of Sakamoto) for smoothing image data after initial processing (column 9, line 68 to column 10, line 3 of Sakamoto).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee and Sakamoto are combinable because they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the smoothing means to smooth the image data after some initial processing, as taught by Sakamoto, wherein said initial processing is the first image data changing taught by Lee. The motivation for doing so would have been to prevent degradation in the resulting image by processing the image data based on the local image data properties (column 1, line 65 to column 2, line 3 of Sakamoto). Therefore, it would have been obvious to combine Sakamoto with Lee to obtain the invention as specified in claim 7.

Regarding claim 8: Lee does not disclose expressly selecting means for selecting whether to output the first image data before smoothing or after smoothing.

Sakamoto discloses selecting means (figure 13(35) of Sakamoto) for selecting whether to output image data before smoothing or after smoothing (column 9, line 65 to column 10, line 3 of Sakamoto).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee and Sakamoto are combinable because

they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the selection means to select whether to output the image data before or after smoothing, as taught by Sakamoto, wherein said image data is the first image data taught by Lee. The motivation for doing so would have been prevent degradation in the resulting image by processing the image data based on the local image data properties (column 1, line 65 to column 2, line 3 of Sakamoto). Therefore, it would have been obvious to combine Sakamoto with Lee to obtain the invention as specified in claim 8.

Further regarding claim 9: Sakamoto discloses that the selecting means selects the first image data after smoothing when the first image data corresponds to an image other than the halftone image (column 9, line 69 to column 10, line 3 of Sakamoto), and selects the first image data before smoothing when the first image data corresponds to the halftone image (column 9, lines 65-68 of Sakamoto).

8. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US Patent 6,160,913) in view of Hanyu (US Patent 5,995,658).

Regarding claim 10: Lee discloses the image data correcting device, which is the image data correcting device discussed in the arguments regarding claim 1, which are incorporated herein.

Since the apparatus of Lee inputs gray scale image data (figure 1(12) of Lee), it is reasonable to assume that the apparatus of Lee comprises scanning means for scanning an

original document to obtain image data and converting the image data into digital form. However, this is not specifically recited in Lee.

Hanyu discloses scanning means (figure 1(600) of Hanyu) for scanning an original document to obtain image data and converting the image data into digital form (column 4, lines 29-33 of Hanyu).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee and Hanyu are combinable because they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the scanning means disclosed by Hanyu to obtain the image data in digital form, which is then corrected by the image correcting device taught by Lee. The suggestion for doing so would have been that a scanner can obtain the digital image data (column 4, lines 29-33 of Hanyu) that is used by the apparatus taught by Lee (figure 1(12) of Lee). Therefore, it would have been obvious to combine Hanyu with Lee to obtain the invention as specified in claim 10.

Regarding claim 11: Lee discloses the image data correcting device, which is the image data correcting device discussed in the arguments regarding claim 1, which are incorporated herein.

Since the apparatus of Lee inputs gray scale image data (figure 1(12) of Lee) and outputs binary image data (figure 1 ("Binary Image with Halftone Dots Removed & Objects Smoothed") of Lee), it is reasonable to assume that the apparatus of Lee

comprises an image reading device generating image data by scanning an original document; and an image forming device forming a visible image based on the corrected image data supplied by said image correcting device. However, this is not specifically recited in Lee.

Hanyu discloses an image reading device (figure 1(600) of Hanyu) generating image data by scanning an original document (column 4, lines 29-33 of Hanyu); and an image forming device (figure 1(100) of Hanyu) forming a visible image (column 4, lines 59-65 of Hanyu).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee and Hanyu are combinable because they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the image reading device disclosed by Hanyu to obtain the image data in digital form, which is then corrected by the image correcting device taught by Lee. The image correcting device taught by Lee then supplies the image data to the image forming device taught by Hanyu and said image forming device then outputs the image. The suggestion for doing so would have been that the apparatus taught by Lee must be able to obtain gray scale image data (figure 1(12) of Lee), which can be obtained by an image reading device (column 4, lines 29-33 of Hanyu). Further, the apparatus of Lee outputs binary data (figure 1("Binary Image with Halftone Dots Removed & Objects Smoothed") of Lee), so it would be obvious to one of ordinary skill in the art at the time of the

invention to output said binary data using an image forming device, such as the one taught by Hanyu (column 4, lines 59-65 of Hanyu). Therefore, it would have been obvious to combine Hanyu with Lee to obtain the invention as specified in claim 11.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Technology Division 2625

03 April 2006

David Moore

DAVID MOORE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600